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27 November 1968

NRO DECLASSIFICATION/RELEASE INSTRUCTIONS ON FILE

MEMORANDUM FOR: Comptroller, Special Activities
SUBJECT : Program Call, Fiscal Years 1971-1975
REFERENCE : Memo to D/R&D/OSA from COMPT/OSA, Same
Subj, dtd 15 Nov 1968

1. Attached is our proposed revision of the Program Call on Research, Development, and Engineering as requested in reference.

2. Our total personnel requirements for RD&E are contained in "Management Support" in accordance with the Program Call, DD/S&T-4237-68, page 17, which includes "all project officers and other personnel and related personnel costs allocated to Collection Systems R&D" in Management Support.

3. While no submission is made by this office in the Category "Collection of Intelligence" D/R&D does provide and will continue to provide technical support to the OSA operational programs.

4. The FY-1973-75 projections of positions required for the Advanced Aircraft Project have been estimated, based primarily on the OXCART operational manning, and have been prepared in close cooperation with [REDACTED] in your office. 25X1A As the system concept has not yet been defined, these estimates cannot be further substantiated, and are offered only to provide starting points for subsequent determinations at such time as the project becomes a reality. No estimates are provided on facilities, and other costs, nor can such estimates be made prior to the completion of the concept formulation in FY-1970. Projection is made for positions in FY-1976,

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the first operational year for reference only. Note that this number is quite close to the operational manning of OXCART. Actual manpower requirements will depend not only on the physical concepts arrived at but also on the magnitudes and types of support to be received from the

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Deputy for
Research and Development
Special Activities

Attachment:
As stated

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CATEGORY : Research, Development, and Engineering
 SUB-CATEGORY : Collection Systems
 ELEMENT : Management Support
 PROGRESS : In support of NRO funded programs, the following Research, Development, and Engineering activities were pursued:

Flight testing of the new U-2R vehicle has met all projected improvements over the earlier aircraft; in addition, it has shown itself to be a more stable photographic platform, yielding improved results with existing camera systems.

A new camera system has been developed for the U-2, based on one designed for the Air Force. The first operational camera is scheduled for delivery in December 1968. Tests with prototypes have shown the expected high resolution over the full swath of the camera.

A new technique for the reduction of induced drag has been investigated with small scale, low-speed wind tunnel test, and has shown potentiality of a significant drag reduction on the U-2 aircraft. Larger scale tests at Mach and Reynolds numbers near flight values are scheduled for December 1968. If these tests confirm the small scale tests, the technique will be applied to the U-2R for flight test evaluation.

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to collect ELINT. The projected operational readiness date is March 1969. Subsequently, in Phase II, further modification of the AQM-37A will be accomplished to allow collection of [REDACTED]

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Operational readiness for Phase II is expected to be December 1969.

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As a preliminary to the initiation of studies in viable profiles and tactics and for concept formulations, program plans have been evolved for an Advanced Aircraft Reconnaissance System to provide a survivable, quick-reaction system for use in the 1975-1980 time period. Based on recent projections of Soviet and non-Soviet environments and forecasts of potential needs/requirements for such collection systems, studies will be initiated in 1969 with a projected operational readiness in Fiscal Year 1976. All flight modes and regimes will be investigated during the studies; no commitment has been made with respect to the ISINGLASS boost-glide concept discussed in prior years, although funding and manning forecasts are based on the ISINGLASS forecasts lacking any other plausible data base.

Techniques for increasing the re-light altitude of the U-2 engine have been investigated. An engine has been modified and tested on the ground. This engine is being delivered to the aircraft manufacturer for installation in a U-2R. Flight test is planned to begin in January 1969.

Wind tunnel tests have been conducted on techniques for cooling camera windows for hypersonic aircraft using a fuselage cavity and helium injection. Test data is now being analyzed, and preliminary results show that satisfactory cooling, with adequate control of thermal gradients in the window, can be accomplished with reasonable amounts of helium. These studies have shown that the window will not pose insurmountable problems in the development of hypersonic reconnaissance vehicles if such are needed for the Advanced Aircraft Reconnaissance System.

Concepts in ground to ground image transmission for interpretable photography were formulated and techniques for air-ground image transmission were reviewed. Active development has not been initiated, however, awaiting further developments in components and further definition of system requirements. It is expected that more active development will be warranted in the near future.

Some techniques for reduction of the effect of atmospheric haze have been investigated. While showing some promise of limited applicability, the results have been inadequate to date to warrant application to operational camera systems.

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Interest has continued in the possible application of high resolution (10 feet) side-looking radar systems. However, no active programs have been pursued during this period.

In-house studies have been conducted on the applicability of methane fuel to reconnaissance aircraft. Study programs are being formulated.

A program has been formulated for the study and development of small air-breathing engines, for application to accessory vehicles for use in conjunction with the U-2 for ELINT, emplacement, etc.

Techniques for the reduction of infra-red radiation from the IDEALIST engine were evaluated. Effectiveness of the technique considered was not adequate to justify weight, complexity, and performance penalties incurred.

OBJECTIVE :

To provide technical and financial management of development and engineering within the scope of the National Reconnaissance Program activities, primarily with respect to photographic and radar imaging sensor systems, high altitude aircraft systems, and associated sub-systems, components, techniques, and materials for technical collection efforts, both in the acquisition of data and in transmission to the using offices. This RD&E effort provides support for advancement of the IDEALIST, [REDACTED] Advanced Aircraft, and general development programs.

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METHOD OF APPROACH:

The general approach is through the stimulation of contractors to solve pressing state-of-the-art limitations, and to solicit concepts from corollary units within and outside of the Government; and to provide for the interpretation and translation of intelligence requirements into systems requirements.

COORDINATION, JOINT PLANNING AND REQUIREMENTS:

The Research, Development, and Engineering activities are closely coordinated with other components of the NRP; in

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addition, through the NRO, close liaison is maintained with counterpart offices in the Air Force. Liaison is maintained with counterpart offices in the Navy through the REWSN office of the Naval Materiel Command. Liaison on intelligence requirements is maintained through coordination with COMIREX, OSI, OEL, and NPIC.

RISKS AND UNCERTAINTIES:

Within this element are contained a number of development and engineering programs. Individual programs within the element do contain the normal technical risks and uncertainties associated with any development.

ALTERNATIVES CONSIDERED:

During the development phase, one is, of necessity, considering alternatives; thus this aspect is inherent. For example, efforts on advanced aircraft collection systems contain, as a primary portion, consideration of various possible aircraft systems; these same efforts contribute to a consideration at higher levels of the alternates of aircraft and satellite collection of data.

RESOURCES REQUIRED:

| <u>Positions:</u> | 68 | 69 | 70 | 71 | 72 | 73 | 74 | 75 | 76 |
|--|-------|----|----|----|----|----|----|----|----|
| R&D/OSA | 25X1A | | | | | | | | |
| Basic RD&E | | | | | | | | | |
| Adv A/C | | | | | | | | | |
| Sub-Total D/R&D (Professional (Secretarial | | | | | | | | | |
| Other OSA | | | | | | | | | |
| Adv A/C Support | | | | | | | | | |
| TOTAL RD&E | | | | | | | | | |

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The RD&E staffing decreased with the discontinuance of OXCART related efforts. A continuing level of effort of nine people will be involved in basic RD&E. With the initiation of major efforts in the development of an advanced aircraft system, beginning in FY-1972, a corresponding increase in manpower will be required. Personnel listed above will be involved in the development, testing and preparation for operations. All personnel involved in the advanced aircraft program are carried within the RD&E category through FY-1975, including those in training for the operational missions postulated for FY-1976. As the advanced aircraft system is still in the concept formulation stage, definite, defensible forecasts cannot be made yet; the estimates included herein are based on early studies of the ISINGLASS system and on manpower required for the discontinued OXCART program. Pending completion of the concept of operations, or concept of test, etc., it is patently impossible to make realistic projections of funding required for travel, communications, or facilities. In addition, decisions relative to the joint funding of the various aspects of the advanced aircraft program, between the NRO, DOD (USAF), etc., have not been made.

The projections above do provide some indication that major personnel and support funds may be required in the period FY-1973 and beyond.

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[Handwritten notes: 2013-08-27, TBS, Program call 2-13]

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